TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-02-2023
Type of Mix :	Tack coat
Sample I/D :	7
Location	Hegdenagar 1st c/s road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**Ch'@69**	**Ch'@165**	**Ch'@223**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.764	0.789	0.749
Final weight of plate after application of tack Coat (c)	Kg	0.787	0.812	0.772
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

TEJUS CONSULTANTS

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-02-2023
Type of Mix :	BC
Sample I/D :	BC7

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	921	951
2. Weight of Mixture after extraction, g	872	901
3. Weight of Bitumen	49	50
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	52.00
8. Bitumen content in %	5.49	5.47
9. Average Bitumen content in %	5.48	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Hegdenagar 1st c/s road	Date of Sampling:	11-02-2023
Type of material & Purpose:	BC	Date of testing:	11-02-2023
		Oven Dry Wt (gms):	872.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	75	75.0	8.60	91.40	90 - 100
9.50	115	190.0	21.79	78.21	70 - 88
4.75	129	319.0	36.58	63.42	53 - 71
2.360	112	431.0	49.43	50.57	42 - 58
1.180	105	536.0	61.47	38.53	34 - 48
0.600	88	624.0	71.56	28.44	26 - 38
0.300	72	696.0	79.82	20.18	18 - 28
0.150	62	758.0	86.93	13.07	12 - 20
0.075	55	813.0	93.23	6.77	4 - 10
Pan	59.0				
Total	872.0				

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TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	11-02-2023
Type of Mix :	Tack coat
Sample I/D :	6
Location :	Hegdenagar 2nd cross road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Loacation	**Chainage**	**@Ch:93**	**@Ch:185**	**@Ch:226**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.812	0.817	0.823
Final weight of plate after application of tack Coat (c)	Kg	0.835	0.840	0.846
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.252	0.254	0.253
Average	Kg/sq.m	0.253		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt Ltd
Date of Testing	:	11-02-2023
Type of Mix	:	DBM
Sample I/D	:	DBM-6

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	903	943
2. Weight of Mixture after extraction, g	864	902
3. Weight of Bitumen	39	41
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	41.00	43.00
8. Bitumen content in %	4.54	4.56
9. Average Bitumen content in %	4.55	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Hegdenagar 2nd cross road	**Date of Sampling:**	11-02-2023
		Date of testing:	11-02-2023
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	864

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	68.0	68.0	7.87	92.13	90-100
19.00	122.0	190.0	21.99	78.01	71-95
13.20	118.0	308.0	35.65	64.35	56-80
4.750	152.0	460.0	53.24	46.76	38-54
2.360	105.0	565.0	65.39	34.61	28-42
0.300	165.0	730.0	84.49	15.51	7-21
0.075	75.0	805.0	93.17	6.83	2-8
Pan	59.0	59.0			
Total	864.0				

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Consultant's Representative

TEJUS

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE BITUMINOUS MACADAM MIX

Name of Work	:	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub divtsion
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	Benaka Developers & Project Pvt Ltd
Date of Testing	:	11-02-2023
Type of Mix	:	DBM
Sample I/D		DBM-7

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	901	925
2. Weight of Mixture after extraction, g	862	885
3. Weight of Bitumen	39	40
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	41.00	42.00
8. Bitumen content in %	4.55	4.54
9. Average Bitumen content in %	4.55	
10. Minimum Bitumen content in %	4.50	

GRADATION FOR DBM AFTER EXTRACTION

(As per MORT&H 500-10,Grading-2)

Sample Location:	Hegdenagar 3rd cross road	**Date of Sampling:**	11-02-2023
		Date of testing:	11-02-2023
Type of material & Purpose:	DBM	**Oven Dry Wt.(gms):**	862

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0.0	0.0	0.00	100.00	100.00
26.50	62.0	62.0	7.19	92.81	90-100
19.00	123.0	185.0	21.46	78.54	71-95
13.20	135.0	320.0	37.12	62.88	56-80
4.750	155.0	475.0	55.10	44.90	38-54
2.360	102.0	577.0	66.94	33.06	28-42
0.300	166.0	743.0	86.19	13.81	7-21
0.075	66.0	809.0	93.85	6.15	2-8
Pan	53.0	53.0			
Total	862.0				

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TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	12-02-2023
Type of Mix :	Tack coat
Sample I/D :	7
Location :	Hegdenagar 3rd cross road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Loacation	**Chainage**	@89	@138	@212
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.775	0.803
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.798	0.826
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.254	0.254	0.254
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	12-02-2023
Type of Mix :	Tack coat
Sample I/D :	8
Location	Hegdenagar 2nd c/s road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**Ch'@75**	**Ch'@157**	**Ch'@212**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.791	0.812	0.754
Final weight of plate after application of tack Coat (c)	Kg	0.814	0.835	0.777
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.252	0.252
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	12-02-2023
Type of Mix :	Tack coat
Sample I/D :	9
Location	Hegdenagar 3rd c/s road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location	**Chainage**	**@82**	**@169**	**@218**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.812	0.748	0.755
Final weight of plate after application of tack Coat (c)	Kg	0.835	0.771	0.778
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.253	0.254	0.253
Average	Kg/sq.m	0.254		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	12-02-2023
Type of Mix :	BC
Sample I/D :	BC8

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	952	933
2. Weight of Mixture after extraction, g	902	884
3. Weight of Bitumen	50	49
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	51.00
8. Bitumen content in %	5.42	5.47
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	Hegdenagar 2nd c/s road	Date of Sampling:	12-02-2023
Type of material & Purpose:	BC	Date of testing:	12-02-2023
		Oven Dry Wt.(gms):	902.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100 00
13.20	78	78.0	8.65	91.35	90 - 100
9.50	113	191.0	21.18	78.82	70 - 88
4.75	120	311.0	34.48	65.52	53 - 71
2.360	115	426.0	47.23	52.77	42 - 58
1.180	106	532.0	58.98	41.02	34 - 48
0.600	92	624.0	69.18	30.82	26 - 38
0.300	75	699.0	77.49	22.51	18 - 28
0.150	66	765.0	84.81	15.19	12 - 20
0.075	58	823.0	91.24	8.76	4 - 10
Pan	79.0				
Total	902.0				

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	12-02-2023
Type of Mix :	BC
Sample I/D :	BC09

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	937	902
2. Weight of Mixture after extraction, g	888	855
3. Weight of Bitumen	49	47
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	49.00
8. Bitumen content in %	5.40	5.43
9. Average Bitumen content in %	5.42	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	Hegdenagar 3rd c/s road	Date of Sampling:	12-02-2023
Type of material & Purpose:	BC	Date of testing:	12-02-2023
		Oven Dry Wt.(gms):	888.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	71	71.0	8.00	92.00	90 - 100
9.50	112	183.0	20.61	79.39	70 - 88
4.75	135	318.0	35.81	64.19	53 - 71
2.360	118	436.0	49.10	50.90	42 - 58
1.180	108	544.0	61.26	38.74	34 - 48
0.600	86	630.0	70.95	29.05	26 - 38
0.300	72	702.0	79.05	20.95	18 - 28
0.150	65	767.0	86.37	13.63	12 - 20
0.075	55	822.0	92.57	7.43	4 - 10
Pan	66.0				
Total	888.0				

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Authorised Signatory

ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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TEJUS

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 65 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	Benaka Developers & Project Pvt Ltd

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	21.02.2024
		Date of Testing	21.02.2024

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	823	75	929	78
16.0	12.5	1226	122	1238	116
12.5	10.0	521	72	452	57
10.0	6.3	462	50	436	63
Total		3032	319	3055	314

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.52	
Elongation Index(%):	10.28	
Combined FI+EI (%)	20.80	

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	BC	**Date of Sampling**	21-02-2023
Sample Location	At plant	**Date of Testing**	21-02-2023

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	385.00	371.00	348.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	290.00	278.00	258.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	95.00	93.00	90.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.68	25.07	25.86	
5	Average Aggregate impact value	(%)	25.20			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Bemaka Developers & Project Pvt.Ltd.
Date of Testing :	23-02-2023
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	923	919
2. Weight of Mixture after extraction, g	874	871
3. Weight of Bitumen	49	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	50.60	50.00
8. Bitumen content in %	5.48	5.44
9. Average Bitumen content in %	5.46	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-17,Grading-2)

Sample Location:	Shabarinagar main road	Date of Sampling:	23-02-2023	
Type of material & Purpose:	BC	Date of testing:	23-02-2023	
		Oven Dry Wt.(gms):	874.0	

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	68	68.0	7.78	92.22	90 - 100
9.50	121	189.0	21.62	78.38	70 - 88
4.75	118	307.0	35.13	64.87	53 - 71
2.360	113	420.0	48.05	51.95	42 - 58
1.180	102	522.0	59.73	40.27	34 - 48
0.600	89	611.0	69.91	30.09	26 - 38
0.300	78	689.0	78.83	21.17	18 - 28
0.150	62	751.0	85.93	14.07	12 - 20
0.075	70	821.0	93.94	6.06	4 - 10
Pan	53.0				
Total	874.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	23-02-2023
Type of Mix :	Tack coat
Sample I/D :	1
Location	Shabarinagar main road

Determination	**Unit**	**Test No**		
		1	**2**	**3**
Location/ Chainage		**@Ch:66**	**@Ch:123**	**@Ch:205**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.772	0.774	0.781
Final weight of plate after application of Tack Coat (c)	Kg	0.795	0.797	0.804
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	WMM	**Proposed Use**	**WMM**
Sample Location	Shabarinagar Layout 1st Main Road	**Date of Sampling**	**01-03-2023**
		Date of Testing	**02-03-2023**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	611	84	520	75
16.0	12.5	1132	121	961	112
12.5	10.0	773	53	732	52
10.0	6.3	614	60	560	48
Total		**3130**	**318**	**2773**	**287**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.16
Elongation Index(%):	10.35
Combined FI+EL (%)	20.51

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Consultant's Representative

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TEJUS
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Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	01-03-2023
Sample Location	Shabarinagar Layout 1st Main Road	**Date of Testing**	02-03-2023

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	379.00	351.00	356.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	284.00	265.00	265.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	95.00	86.00	91.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.07	24.50	25.56	
5	Average Aggregate impact value	(%)	25.04			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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Name of Work	:	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing	:	02-03-2023
Type of Mix	:	WMM
Sample I/D	:	WMM-4

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Shabarinagar Layout 1st Main Road	Date of Sampling:	01-03-2023
Type of material & Purpose:	WMM	Date of testing:	02-03-2023
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	378	378	3.78	96.22	95-100
22.4	2372	2750	27.50	72.50	60-80
11.2	2478	5228	52.28	47.72	40-60
4.75	1570.0	6798	67.98	32.02	25-40
2.36	775.0	7573	75.73	24.27	15-30
0.6	801.0	8374	83.74	16.26	8.0-22.0
0.075	980.0	9354	93.54	6.46	0-8
Pan	646.0	10000			
Total	10000.0				

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TEJUS

Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	**03-03-2023**
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	**1**	**2**
Chainage	**Shabarinagar Layout 1st Main Road Ch:302.00**	**Shabarinagar Layout 1st Main Road Ch:420.00**
Wt. of wet material from hole (Ww) gms.	5970	5992
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10592	10593
Wt. of sand in hole+ cone (w3) gms.	4402	4412
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3321	3330
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.40	6.20
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.24
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.25	98.53
% compaction required	98%	98%

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Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 06 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)

	Date:	04-03-2023
Layer no. or level	WMM I layer	
Depth of hole	250mm	
Field density:	1	2
Chainage	Shabarinagar Layout 1st Main Road Ch:466.00	Shabarinagar Layout 1st Main Road Ch:638.00
Wt. of wet material from hole (Ww) gms.	5978	5985
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10587	10595
Wt. of sand in hole+ cone (w3) gms.	4413	4402
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3331	3328
Bulk density of sand (γs)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (γb)=(Ww/w4*(γs))gm/cc	2.37	2.37
Moisture meter reading(moisture content)	6.30	6.30
Result		
FDD(Wet unit dry material)=(100γb/100+me)gm/cc	2.23	2.23
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.17	98.38
% compaction required	98%	98%

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Consultant's Representative

TEJUS
CONSULTANTS

Project	Improvements to roads and drains at Hegdenagar and surrounding area in Ward No 05 Byatarayanapura sub division
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	Benaka Developers & Project Pvt Ltd

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material		DBM		**Proposed Use**	**DBM**
Sample Location		At plant		**Date of Sampling**	**04-03-2023**
				Date of Testing	**04-03-2023**
Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7385	665	7045	340
31.5	25.0	4122	250	3622	275
25.0	20.0	2455	252	1085	233
20.0	16.0	1565	322	922	250
16.0	12.5	592	105	455	182
12.5	10.0	482	65	266	85
10.0	6.3	120	68	62	65
Total		**16721**	**1727**	**13457**	**1430**

Results

Flakiness Index(%):	10.33
Elongation Index(%):	10.63
Combined FI+EL (%)	20.95

Note:
1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported reported within 15days from the date of testing.
4. The material used in the site satisfied the standard of MORTH 5th revision and hence can be used in the work.

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Consultant's Representative

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